embedded, sectioned at three 200um intervals and stained with Toluidine Blue. Joints were scored according to the OARSI criteria, by a Veterinary pathologist blinded to treatment group, with higher scores reflecting worse pathology.
Results: APPA treatment reduced the total Joint score by 21% (p=0.01, Mann Whitney U test), when compared to vehicle. Tibial and femoral cartilage degeneration scores were also significantly reduced (p=0.01 and p=0.03, respectively, Mann Whitney U test). Rats showed no adverse effects at the 80 mg/kg dose and gained weight through the study. A modest (3%) decrease in weight was observed with APPA and also with a non-efficacious drug control, compared to vehicle controls, indicating that a 3% weight difference (351 grams compared to 339 grams) was not responsible for the observed efficacy.
Conclusions: APPA was well tolerated, and had no adverse effects when dosed at 80 mg/kg BID. Significant decreases in measures of cartilage degradation were observed for a number of well-described histologic parameters. These differences were statistically significant with modest group sizes and relatively short follow-up time points. These results, along with decreased lameness in dogs with clinical OA, indicate that APPA should be further investigated for both pain relief and disease modification.

133
EXPOSURE TO STATIC MAGNETIC FIELD FOR PAIN OF ADJUVANT ARTHRITIS RATS

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Purpose: In recent years reports, the body of a living animal or person, exposure to static magnetic fields (SMF) has been to be clinically effective. However, the SMF mechanism of pain relief, it is not clear.
In the present study, examine the effectiveness of the application of a SMF upon pain relief, we performed a study on rats with Adjuvant arthritis(AA).
Methods: Eighteen rats(Sprague-Dawley, Female, 5 week, 150 g) were divided into 3 groups. G I and G II, we injected 0.5ml of incomplete Freund's Adjuvant into the left hind foot in order to induce AA. Injected animals were then maintained for a further 8 weeks in order to develop a chronic pain model. Immediately following this 8 week induction period, G I was exposed to SMF treatment for a further 4 weeks (up to week 12 following the onset of AA). G II wasn't exposed to SMF treatment. G III (control) was maintained without any treatment for a total period of 12 weeks. Following SMF stimulation(mean flux density at the center of a cage: 20-80mT, and magnetic surface: 200mT), we measured blood flow volume in the paw and then reactive speed response to thermal stimulation.
Results: Tail and paw blood flow was significantly lower in G I and G II than G III when analysed prior to the exposure of G I to SMF at the 8 week timepoint. After 4-weeks exposure of G I to SMF (between the 14 week and 18 week timepoints), it was found that the blood flow in the tail and hind foot of G I was significantly higher than that of G II. There was no significant difference in blood flow (tail or hind paw) when compared between G I and G III at the 18 week timepoint. The reactive speed response was significantly slower in G I and G II than in G III when tested before the exposure of G I to SMF at the 8 week timepoint. Following exposure of G I to SMF for 4 weeks, we found that the reactive speed response of G I was significantly faster than that of G II. There was no significant difference in reactive speed response when compared between G I and G III at the 18 week timepoint.
Discussion: In the present study, we found that after exposure to SMF, the results of the planter test of AA rats changed to levels observed in normal rats. We also observed a significant decrease in overall reactive speed response (pain-related) in the SMF-treated AA rat, along with an increase in blood flow. Consequently, we postulate that the SMF-induced increase in blood flow observed in the AA rats described in the present study was most likely due to the removal of pain rather than to the induction of stress. Further basic research, using a specific pathophysiological animal model are necessary in order to fully elucidate the precise manner in which SMF relieves pain in a variety of painful conditions, including ischemic pain and inflammatory pain. As complementary and alternative medicine continues to expand, there is increasing interest in the potential therapeutic use of SMF for therapeutic uses.
Furthermore, a clinical study has shown that SMF treatment successfully relieved pain in patients suffering from neck shoulder pain and muscle fatigue as a direct result of ischemic conditions in the microcirculation. We consider it important to combine the application of SMF with Western medicine or exercise therapy.

134
PHYSIOLOGIC EFFECTS OF LONG-TERM IMMOBILIZATION OF THE EQUINE DISTAL LIMB

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Purpose: To describe the clinical, biomechanical and physiological effects of distal limb immobilization and remobilization in the equine metcarpophalangeal joint.
Methods: Eight healthy horses were used in the study. One forelimb of each horse was immobilized in a fiberglass cast for 8 weeks, followed by 12 weeks of a standardized training program of increasing exercise. Serum and synovial fluid were collected during the study for biomarker analyses. The metacarpal bone and proximal phalanges were examined using radiography, computed tomography, nuclear scintigraphy, magnetic resonance imaging, and histomorphometry.
Results: All horses were lame in the immobilized limb after cast removal. Lameness in the immobilized limb improved slightly over time however, low-grade lameness was also observed in the contralateral limb at the end of the exercise period. Range of motion of the immobilized metacarpophalangeal joint was significantly decreased and joint capsule thickening and joint effusion were both significantly increased during the exercise period, compared with baseline values. Significant increases in bone sclerosis and lysis were observed radiographically in the immobilized limb during the exercise period, as well as increased osteophyte, enthesiophyte and fragment formation, as compared with baseline. Computed tomography revealed a significant time-by-cast interaction on bone density in the third metacarpal bone and proximal sesamoid bones. Magnetic resonance imaging revealed a significant increase in synovial proliferation, articular cartilage degeneration, osteophyte and enthesiophyte formation, and thickening within the soft tissues of immobilized metacarpophalangeal joints. Significant increases in the uptake of radionucleotide within the bones of both the immobilized metacarpophalangeal joint and contralateral limb were present at the end of the study, compared to baseline, on nuclear scintigraphic evaluation. Gross evaluation of the metacarpophalangeal joint revealed significant increase in lesions in the immobilized limb relative to the non-immobilized limb including wear line formation, articular cartilage erosion, osteochondral fragmentation and palmar arthrosis. Serum biomarkers including CTX-1, BALP and GAG concentrations varied over the duration of the study period and displayed significant concentration increases and decreases. Synovial fluid biomarkers, including PGE_2, WBC and total protein concentration varied significantly at various points in this study as well.
Conclusions: Eight weeks of single-limb immobilization is sufficient to induce significant changes to bone mineral density, articular cartilage and surrounding soft tissue structures in the immobilized limb. Twelve weeks of exercise is insufficient for recovery to pre-immobilization bone and soft tissue conditions and active bone remodeling appears to be ongoing for an extended duration after removal of the cast. Additionally, there is evidence which is suggestive of changes in the bone of the contralateral limb which may result in ongoing lameness and an overall delay in return to function.

135
PREVALENCE OF NATURALLY OCCURRING CARTILAGE DEFECTS IN THE OVINE STIFLE (KNEE)

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